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ABSTRACT

To ensure effective evaluation, classroom teachers should have consistent views of the nature of educational measurement and evaluation. An 11-component model of educational measurement and evaluation was developed from a literature review. Based on this model, an instrument, the Conceptualization of Educational Measurement and Evaluation Scale (CEMES) was developed. The CEMES was administered to 100 secondary school teachers in Ondo (Nigeria) in science, the arts, and commercial and technical subjects; and 77 completed responses were analyzed. Overall, teacher attitudes were similar regardless of their fields. Findings suggest that teachers do not appreciate the use of non-test evaluation techniques. On the whole, there is ample room for improvement in the conceptualization of educational measurement and evaluation held by these teachers. Teacher education may need to focus on these areas to a greater degree. Two tables present study data, and two appendixes provide an additional two tables of values for subject area. (SLD)

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Conceptualization of educational measurement and evaluation held by some Nigerian Secondary School teachers

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Conceptualization of Educational measurement and evaluation held by some Nigerian Secondary School teachers.

Abstract

Classroom teachers are often involved in the evaluation of school learning. For effectiveness, teachers should hold a consistent view of the nature of educational measurement and evaluation.

The secondary school teachers involved in this study hold views of the nature of educational measurement and evaluation that are not wholesome, subject areas notwithstanding. This finding has implications for further research as well as for teacher education as pointed out in the paper.

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Introduction

For effectiveness on the job, teachers should develop skills in the use of educational measurement and evaluation techniques. These techniques include constructing, administering, scoring of measurement instruments (like tests, questionnaires, rating scales etc), interpreting scores as well as making judgement in terms of set goals or for a specific purpose (Stanley & Hopkins, 1972).

Expecting teachers to be involved in detailed educational measurement and evaluation (Bloom, 1961; Ebel, 1961a; Stanley & Hopkins, 1972) is not an unusual demand. As a matter of fact, one may say that teachers are quite familiar with the demand. In the Nigerian situation in particular, the emphasis on continuous assessment in schools which requires the evaluation of student learning along the cognitive, affective and psychomotor domains of human behaviour, reechoes the demand (Ojerinde, 1983). Moreover, when one considers the history of testing as well as the prospects that testing has for the future (Bejar, 1983; Jaegar, 1987; Rudman, 1987) one would readily share the view that the demand may be with us for some time to come,. However, one major implication of the demand is that teachers should acquire a very high level of competence in measurement and evaluation (Ebel, 1961b; Stanley & Hopkins, 1972). This is by no means unattainable. It is realised that complex as measurement of classroom learning may be (Stiggins, Conklin & Bridgeford, 1986) teachers can develop the instruments needed in educational measurement and evaluation (Ebel, 1975; Frisbie, 1988).

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Besides competence in test construction however, teachers need to acquire a wholesome conceptualization of educational measurement and evaluation to enable them appreciate that educational measurement and evaluation consist of components which are distinct and interelated. For the purpose of this study an appreciation of the interrelatedness of the components of educational measurement and evaluation is considered an indication of an individual's conceptualization of educational measurement and evaluation. The point of view in this study is that teachers who have acquired a wholesome conceptualization of educational measurement and evaluation, would be in a better position to adequately moniter student learning and in addition foster in students favourable attitude to tests, thereby reducing the tension, stress and anxiety students generally associate with examinations (Baber et-al, 1992).

It has been reported that most students dread examinations to such an extent that they would readily resort to various forms of examination malpractice (Denga, 1983). To prevent this negative reaction to examinations, teachers should encourage students to accept examinations as routine part of the teaching-learning process and not as events to be dreaded. Teachers and students should see examinations for what they are: measuring instruments that provide unbiased quantitative information about relevant attributes of the testee. In essence teachers should acquire a wholesome conceptualization of educational measurement and evaluation.

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But it has been observed that some Nigerian secondary school teachers' hold questionable views about academic achievement and how it should be measured (Akindeh n, in press). It was therefore considered necessary to investigate Nigerian secondary school teachers' conceptualization of educational measurement and evaluation.

Research Instrument

A model of educational measurement and evaluation was developed from an extended review of related literature. The model consists of eleven distinct components. They are:

I Identifying the learning outcome to be tested.

II Constructing tests

III Constructing other measuring instruments besides test (e.g. questionnaires, rating scale)

IV Administering tests in the classroom.

V Administering questionnaires and rating scales in school teaching.

VI Scoring (marking) tests, questionnaires or rating scales.

VII Computing statistical data for interpreting scores.

VIII Providing comprehensible measurement information on students' performance to parents/guardians.

IX Discussing test results with students to improve learning.

X Using test results for instructional planning.

XI Keeping suitable record of scores.

Based on this model, the Conceptualization of Educational Measurement and Evaluation Scale (CEMES) was developed. It is a semantic differential scale developed to measure understanding of the nature of educational measurement and evaluation. The seven point evaluation scales used in the CEMES (Useful/Useless,

Important/Unimportant; Easy/Difficult; Like a lot/Dislike a lot) were adopted from findings of factor analysis (Butzow & Davis, 1975) The scales have been validated and used with some Nigerian preservice science teachers. (Akindehin, 1985). To compute the reliability of the CEMES, factor scores were derived in respect of the 11 concepts of the CEMES as suggested by Heisee (1977). The Cronbach's coefficient alpha obtained was 0.88.

Research Procedure

The CEMES was administered to one hundred secondary school teachers in Onde, Ondo State Nigeria. The teachers belonged to the Science, Arts and Commercial/Technical subject areas. The responses returned duly completed were 77.

Data Analysis

The linear distance (D) between any two concepts was derived as suggested by Kerlinger (1979). It is a measure of the relatedness of the components of educational measurement and evaluation as conceptualised by the teachers (See the Appendices for the D values). This linear geometric distance approach has been shown to yield satisfactory results in preference to transformation of interconcept distances or rigorous statistical procedures (Sawrey, Keller & Conger, 1960; McQuitty, 1964; Hofman, 1967). The mean of the D-scores which was found to be 1.40 was used as the critical D value for determining concepts that teachers consider similar enough to form clusters. The cluster size (the number of concepts in a cluster) was obtained.

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An analysis of variance test was carried out on the cluster size distribution to test the significance of differences in the conceptualization of educational measurement and evaluation held by teachers in the three subject areas.

Results and Discussion

The cluster size distribution is presented in Table 1.

Table 1 about here

It could be seen from the distribution that teachers in the different subject areas hold different conceptions of educational measurement and evaluation as indicated by differences in the cluster sizes. All the teachers involved in this study share the same view about Concept V. Also there is an appreciable measure of conformity in their views about Concepts I, II, III, IV, VIII, X and XI. However there are sharp contrasts about Concepts VI, VII and IX. While Arts and Science teachers relate Concept VI with eight other concepts, Commercial/Technical teachers relate it to only two other concepts. Theme are Concepts III and V (see Appendix II). This finding suggests that Commercial/Technical teachers associated scoring (marking) with questionnaires or rating scales and not with other components of educational measurement and evaluation.

The conception of Science teachers about Concept VII (computing statistical data for interpreting scores) disagreed with the conception of the two other groups. This finding is perhaps a reflection of difference in statistical computational skills of the teachers. It was also found that Arts as well as Commercial/Technical teachers identified the relatedness among Concept IX and other concepts

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Table 1

Cluster size distribution

	Cluster Size		
	Arts	Science	Commercial/Technical
Concepts			
I	6	7	6
II	7	7	6
III	4	3	3
IV	7	7	6
V	3	3	3
VI	8	8	2
VII	3	7	2
VIII	8	8	6
IX	7	3	6
X	7	6	6
XI	6	5	6

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whereas Science teachers do not. This finding seems to suggest that Science teachers do not appreciate that discussing test results with students to enhance learning is important in educational measurement and evaluation. Perhaps these teachers need to be encouraged to adopt the practice.

One could also draw attention to the views the teachers hold about Concepts IV and V. It seems the teachers involved in this study do not consider the concepts as part of educational measurement and evaluation. It would be recalled that these concepts relate to non-test evaluation techniques. Findings from this study suggest that the teachers do no appreciate the use of non-test evaluation techniques.

Generally there is an appreciable measure of conformity in the conception of educational measurement and evaluation held by all the teachers involved in this study irrespective of their subject areas. To subject this to statistical test the one way analysis of variance test was carried out on the cluster size distribution. The summary analysis of variance table is presented as Table 2. As seen in the table the computed F ratio was not significant.

Table 2 about here

Thus there is no significant difference in the conception of educational measurement and evaluation held by teachers in the different subject areas. It could however be seen that the common trend that runs through these conceptions shows that the secondary school teachers involved in the study need to develop a more wholesome conceptualization of educational measurement and evaluation.

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Table 2

ANOVA Summary Table

Source	SS	df	ms	F
Between group	10.42	2	2.21	1.48*
within group	105.82	30	3.53	
Total	116.24	32		

*not significant

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In the Nigerian context where continuous assessment, with a lot of input from the teacher, is to form part of the final assessment of students' academic attainment at the different educational levels, the findings from this study calls for immediate action from all concerned to improve on the conception teachers hold of educational measurement and evaluation.

Also, this study has opened up an area that needs to be thoroughly investigated. If teachers do not hold a wholesome conception of educational measurement and evaluation, one may wish to investigate how educational measurement and evaluation is practised in schools. One may also wish to investigate the level of competence acquired by teachers with reference to educational measurement and evaluation. In the meantime, it could be suggested from this study, that there seems to be the need to design relevant teacher education programmes on educational measurement and evaluation for teachers.

Conclusion

This paper draws attention to the importance of educational measurement and evaluation to the education process and the role of teachers in this respect. But if teachers are to measure up to expectation, they need to develop a coherent conception of educational measurement and evaluation. Teachers' conceptualization of educational measurement and evaluation was determined in this study from their perception of interelatedness of the 11 components of educational measurement and evaluation developed in the study. A semantic differential scale was developed for this purpose.

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It was found that there was conformity in the conceptualisation of educational measurement and evaluation held by all the teachers irrespective of the teachers' subject areas. On the whole, there is ample room for improvement in the conceptualisation of educational measurement and evaluation held by the secondary school teachers involved in the study. The paper also discusses the implications of these findings for further research, and for the school system.

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Appendix I

D Values for Science and Arts*

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I		0.1	1.9	0.4	2.1	1.0	1.2	0.4	1.4	1.0	1.1
II	0.5		2.0	0.5	2.1	1.1	1.2	0.5	1.5	1.1	1.2
III	1.6	1.5		2.2	0.4	0.9	0.8	2.1	2.7	1.7	2.8
IV	0.7	0.4	1.7		2.4	1.3	1.4	0.2	1.1	1.2	0.7
V	1.8	1.7	0.3	1.9		1.1	1.0	2.3	2.7	1.9	2.9
VI	1.9	1.0	1.3	1.3	0.7		0.2	1.2	1.9	1.0	1.9
VII	2.4	2.3	0.9	2.5	0.7	1.3		1.3	1.9	1.1	2.0
VIII	0.4	0.3	1.3	0.5	1.5	0.9	2.2		1.0	1.0	0.8
IX	0.6	0.3	1.7	0.4	1.7	1.3	2.6	0.6		1.7	0.9
X	0.9	0.7	1.4	0.5	1.7	1.1	2.3	0.8	0.7		1.4
XI	0.9	0.8	2.1	0.5	2.2	1.7	3.0	0.9	0.6	0.8	

*The upper triangle are the D - values for Science and the mirror image are the D values for Arts.

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Appendix II

D values for Commercial/Technical

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
I											
II	0.4										
III	2.6	2.4									
IV	0.6	0.5	2.5								
V	2.1	2.0	1.1	2.0							
VI	1.5	1.5	1.3	1.5	0.6						
VII	3.0	2.9	0.9	2.9	1.1	1.5					
VIII	0.5	0.4	2.3	0.8	2.0	1.4	2.8				
IX	0.7	1.2	2.9	1.2	2.3	1.7	3.1	1.0			
X	0.8	1.1	2.5	1.0	1.9	1.4	2.8	1.1	0.7		
XI	0.5	0.8	3.0	0.9	2.5	2.0	3.4	0.8	0.7	1.0	

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